Appendix A. Detailed Methodology

Technical Memo #1: MTC 2006 TRANSIT PASSENGER DEMOGRAPHICS SURVEY WORK PLAN
Updated 4/2/2007

Project Phase	Start	Due	Notes
Kickoff Meeting	9/21	9/27	
Sampling (including routes, locations, dates and times by operator)			
Draft plan	9/27	10/5	10/5 conference call to review in-progress sampling plan
Final plan		**10/18**	Assuming we will have all needed rider data by**10/13**
Questionnaire			
Draft		10/11	Conference call to review draft and changes, if necessary
MTC feedback on draft		10/12	Godbe willl take make changes and circulate a revised draft for MTC review
Final for pilot testing		**10/13**	
Final with changes based on pilot, if any	11/3	**11/6**	
Survey Programming & Preparation			
Survey Translation	10/16	10/18	Spanish, Chinese and Vietnamese
Printing	10/19	10/20	Chinese and Vietnamese versions
Programming of survey for PDAs & testing	10/19	10/20	English and Spanish versions
Translation of updated survey, if necessary	11/8	11/10	Spanish, Chinese and Vietnamese
Printing of updated survey, if necessary	11/13	11/14	Chinese and Vietnamese versions
Programming pretest changes, if necessary	11/8	11/13	English and Spanish versions
Pilot Testing (Vallejo Ferry, Union City Transit & BART)			
Data Collection	10/24	10/28	Union City Transit and BART confirmed; Vallejo Ferry TBD
Data Processing & Analysis	10/30	11/1	
Pilot test results		**11/2**	Conference call at 1:30pm to review memorandum of pilot test results
Phase 1 Data Collection/Volume 1 Reporting (6am to 9pm surveys)			
Fielding of All Remaining Providers*			
Data Collection: pre-Holidays	11/8 or 11/15	12/16	
Data Collection: post-Holidays	1/2	3/31	
Analysis and Reporting			Ongoing keypunching with a one-week lag from fielding week
Data Processing & Analysis	3/26	4/1	
Toplines Report**		**4/2**	Reviewed via phone meeting.
Draft Report, including crosstabs & project documentation	4/3	**4/13**	
MTC feedback on Draft Report		**4/19**	MTC to review off-line; conference call on 4/18 to discuss.
Final Report, including SPSS data file	4/20	**4/30**	
Phase 2 Data Collection/Volume 2 Reporting (overnight surveys)			
Sampling (including routes, locations, dates and times by operator)			
Draft plan		3/6	Conference call to review
Final plan		**3/19**	
Pilot Testing (AC Transit and MUNI)			
Data Collection	4/10	4/21	
Keypunching, Data Processing & Analysis	4/23	5/1	
Pilot test results		**5/2**	Conference call to review memorandum of pilot test results
Fielding of All Remaining Providers			
Data Collection	5/8	6/30	Assuming 2 interviewers per week, 1 interviewer per route.
Analysis and Reporting			Ongoing keypunching with a one-week lag from fielding week
Keypunching, Data Processing & Analysis	7/2	7/16	
Toplines Report**		**7/17**	Reviewed via phone meeting.
Draft Report, including crosstabs & project documentation	7/18	**8/3**	
MTC feedback on Draft Report		**8/17**	
Final Report, including SPSS data file	8/13	**8/28**	
Presentation		TBD	To be scheduled anytime after the report is done.

Notes:
*Data collection method changed from PDAs to paper after pilot test. Keypunching time of a one-week lag needed to be included.
**Review of high-level key findings before delivery of final report

GODBE RESEARCH
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MEMORANDUM

April 13, 2007

TO: Marc Roddin, Metropolitan Transportation Commission

FR: Bryan Godbe, President, Alice Chan, Research Director, Jacob Rannels, Senior Research Manager, and Gayatri Kuber, Research Analyst

RE: MTC 2006 Transit Passenger Demographics Survey – Survey Methods, Instrument Design, Data Collection and Coding Procedures, and Survey Codebook (Technical Memo #2)

This memo documents the overall survey method and procedures, including the process for designing the questionnaire, as well as data collection and coding procedures. Attached in a separate document is the survey codebook.

1. Survey Method

The chief research objective of this survey is to collect statistically valid passenger demographic and general ridership information about users of regional transit systems, which include (and sample size):

- AC Transit (local-n=750, and transbay-n=400)
- ACE (n=400)
- Alameda/Oakland Ferry (n=400)
- BART (n=500)
- Benecia (n=150)*
- CalTrain (n=500)
- CCCTA (n=400)
- Fairfield-Suisun Transit (n=400)
- GG Ferry (ferry, local bus and regional bus, n=400 each)
- MUNI (bus, rail and trolley, n=1000 each, cable car-n=500)
- Rio Vista (as many as possible, estimated to be about 15, given low ridership)*
- SamTrans (n=500)
- Santa Rosa City Bus (n=400)
- Sonoma County Transit (n=400)
- Tri Delta Transit (n=400)
- Union City Transit (n=400)
- Vacaville City Coach (n=400)

* Benicia and Rio Vista were added to the study in February 2007.

- Vallejo (bus and ferry, n=400 each)
- VINE (n=400)
- VTA (bus-n=600, rail-n=500)
- WestCAT (n=400)
- WHEELS (n=400)

To achieve this objective, MTC and Godbe Research agreed that intercept surveys would be the most effective method for reaching the target audience, i.e., transit riders. This method yields the highest incidence rate. (Interviewer recruitment and training procedures are covered under Technical Memo #4b.)

Furthermore, because it is cost-prohibitive to take a census of all the riders on every participating transit system, a sampling plan for each operator was carefully designed such that a randomly selected subset of representative riders would be surveyed, from which system-wide passenger characteristics can be extrapolated. (Details of the sampling plan design and implementation are provided in Technical Memo # 3a and the individual sampling plan for each transit operator.)

2. Questionnaire Design

Starting with the questions of interest to MTC, as listed in the RFP, and applying Godbe Research's experience with similar work in the past, we drafted an instrument that consisted of questions aiming at collecting information about rider demographics and general usage of public transit. The draft instrument was reviewed and approved primarily by the MTC Project Manager, who also solicited feedback from transit operators (such as the ethnicity question being asked the same way as the U.S. Census, except we added more granularity to the answer choices).

Once the questionnaire was approved, it was translated into Chinese/Mandarin, Spanish and Vietnamese and pilot-tested. Meanwhile, the MTC Project Manager also had the translated questionnaires reviewed internally, which resulted in a few minor wording changes. Those were incorporated in the final instruments that are then used in post-pilot data collection. (See Technical Memo #4d and associated documents for Final Survey Instruments and Procedures.)

3. Data Collection

At the start of the project, English and Spanish interviews were to be conducted via PDAs, while Mandarin and Vietnamese surveys were to be administered using paper surveys. Due to difficulties with recruiting qualified bilingual intercept interviewers, Spanish interviews were also administered by paper during the pilot test. Moreover, based on the pilot test findings and thorough discussions about the relative effectiveness of the PDA-assisted interviewing vs. paper-based survey method and procedures, MTC and Godbe Research decided that paper surveys should be used for the English version as well.

The main drawback of the PDA-assisted interviews, as observed during the pilot test, was the higher reluctance of the riders to answer questions aloud (vs. filling out a survey in silence, as practiced in the Spare the Air project). In addition, because of the geographically dispersed nature of the interviews that needed to happen on consecutive days, it was impossible for the PDAs to be returned to a central location on a daily basis for regular data retrievals. As a result, this project could not benefit from the high data availability that normally comes with PDA-assisted interviews. (See Technical Memo #4a for more details on the lessons learned from the pilot test.)

4. Data Coding Procedures

To facilitate data processing and analysis, values were assigned to each answer choice of each question in the survey. (See attached survey codebook for details.) For the pilot test, the PDAs were preprogrammed with the answer values such that minimal backend recoding was required. For the full data collection using paper, keypunchers are given a coding sheet with the assigned values for each question (as shown in the survey codebook).

All subcontractors conducting the intercept interviews were instructed to return completed surveys to Godbe Research every Friday (for the weekday surveys) and Monday (for the weekend surveys). Keypunching occurred every week as completed surveys arrives. As a quality assurance step, we spot-checked the database every week to ensure that there was no data entry error. (See Technical Memo #3b for more details of the procedures used for data processing and weighting.)

It was through this quality control step that we found surveys which did not meet our quality standards. As a result, we had to go back into the field to redo some of the survey shifts, thereby extending the data collection phase.

MTC 2006 TRANSIT PASSENGER DEMOGRAPHICS SURVEY

Code Book

Variable Name	Label	Value Labels	Measure
resp_ID	Respondent ID	-	Scale
Q1	1. When you board this bus/Ferry/Train/Trolley, where were you coming from? Was it from...	1 = Work 2 = Home 3 = School or College 4 = Taking care of personal or business errands 5 = Recreation or entertainment 6 = Shopping 7 = Visiting friends or family 8 = A doctor's office or medical provider 9 = The Airport 98 = Other 99 = DK/NA	Nominal
Q1_oe	1. When you board this bus/Ferry/Train/Trolley, where were you coming from? Was it from...	-	Nominal

Variable Name	Label	Value Labels	Measure
Q2	2. Where are you going to? Is it to...	1 = Work 2 = Home 3 = School or College 4 = Taking care of personal or business errands 5 = Recreation or entertainment 6 = Shopping 7 = Visiting friends or family 8 = A doctor's office or medical provider 9 = The Airport 98 = Other 99 = DK/NA	Nominal
Q2_oe	2. Where are you going to? Is it to...	-	Nominal

Variable Name	Label	Value Labels	Measure
Q3	3. For this trip going between the two locations you just mentioned, what will be your total traveling time, including time for walking, waiting, and any route connections? Please think of the nearest total number of minutes.	1 = Less than 10 minutes 2 = 10 to 19 minutes 3 = 20 to 29 minutes 4 = 30 to 39 minutes 5 = 40 to 49 minutes 6 = 50 to 59 minutes 7 = 60 to 74 minutes 8 = 75 to 90 minutes 9 = More than 90 minutes 99 = DK/NA	Nominal
Q4	4. How often do you travel between these two locations, whether or not you take this transit route, a different type of transportation?	1 = 6 to 7 days a week 2 = 4 to 5 days a week 3 = 1 to 3 days a week 4 = Less than once a week or on occasion 5 = Your first time taking this trip 99 = DK/NA	Nominal

Variable Name	Label	Value Labels	Measure
Q5	5. How did you pay for your fair on this trip?	1 = Cash 2 = Credit or debit card 3 = TransLink 4 = Daily, weekly, monthly or multiple ride ticket or pass 5 = Employee pass paid for by private company 6 = Pass paid for by homeowner's association 7 = Employee pass paid for by transit agency or dependent 8 = Transfer 98 = Other 99 = DK/NA	Nominal
Q5_oe	5. How did you pay for your fair on this trip?	-	Nominal
Q6	6. What is your fair category?	1 = Adult 2 = Senior 3 = Youth or Student 4 = Disabled 5 = DK/NA	Nominal
Q7	7. For this trip today, did you take public transportation because an automobile was not available to you?	1 = Yes 2 = No 99 = DK/NA	Nominal

Variable Name	Label	Value Labels	Measure
Q8	8. Do you normally have an automobile available to you for trips like today's trip?	1 = Yes 2 = No 99 = DK/NA	Nominal
Q9	9. Does it normally create inconvenience for others to have the automobile available to you?	1 = Yes 2 = No 99 = DK/NA	Nominal
Q10	10. What is your home zip code?	-	Nominal
Q11	11. What city do you live in?	-	Nominal
Q12	12. What is your age?	1 = Under 13 2 = 13 to 17 3 = 18 to 24 4 = 25 to 34 5 = 35 to 44 6 = 45 to 54 7 = 55 to 64 8 = 65 or older 99 = DK/NA	Nominal
Q13	13. Do you have children under 13 living with you who depend on public transit for trips to school or for other purposes?	-	Scale

Variable Name	Label	Value Labels	Measure
Q14	14. How many people are in your household, including yourself?	-	Scale
Q15	15. Are you Spanish, Hispanic, or Latino?	1 = Yes 2 = No 99 = DK/NA	Nominal
Q16r1 through Q16r7	16. What is your race or ethnic identification?	1 = White 2 = Black/African American 3 = Asian 4 = Native Hawaiian or Pacific Islander 5 = American Indian or Alaska Native 6 = Filipino 7 = Spanish/Hispanic/Latino 98 = Other 99 = DK/NA	Nominal
Q16_oe	16. What is your race or ethnic identification?	-	Nominal

Variable Name	Label	Value Labels	Measure
Q17	17. Which of the following best describes the total income including everyone in your household before taxes in 2006?	1 = Under $15,000 2 = $15,000 to $24,999 3 = $25,000 to $49,999 4 = $50,000 to $74,999 5 = $75,000 to $99,999 6 = $100,000 to $149,999 7 = $150,000 to $199,999 8 = $200,000 or higher 99 = DK/NA/Refused	Nominal
iwer_id	Interviewer ID	-	Nominal
QA	A. Transit System	1 = AC Transit Local 2 = AC Transit Transbay 3 = ACE Train 4 = Alameda Ferry 5 = BART 6 = Caltrain 7 = CCCTA 8 = Fairfield-Suisun Transit 9 = Golden Gate Ferry 10 = Golden Gate Transit Local	Nominal

Variable Name	Label	Value Labels	Measure
QA Contd.		11 = Golden Gate Transit Regional 12 = MUNI Bus 13 = MUNI Rail 14 = MUNI Trolley 15 = MUNI Cable Car 16 = SamTrans 17 = Santa Rosa Transit 18 = Sonoma County Transit 19 = Tri Delta Transit 20 = Union City Transit 21 = Vacaville City Coach 22 = Vallejo Bus 23 = Vallejo Ferry 24 = VINE 25 = VTA Bus 26 = VA Lightrail 27 = WestCAT 28 = Wheels 29 = Benicia Breeze 30 = Rio Vista Transit	Nominal

Variable Name	Label	Value Labels	Measure
QB	B. Starting Location	-	Nominal
QC	C. Direction	-	Nominal
QD	D. Route Number	-	Nominal
QE	E. Vehicle Number	-	Nominal
Start_time	Interview Start Time	-	Nominal
Start_shift	Interview Start Shift	1 = AM Shift 2 = PM Shift	Nominal
End_time	Interview End Time	-	Nominal
End_shift	Interview End Shift	1 = AM Shift 2 = PM Shift	Nominal
QF	F. Interview Location	1 = Station / Stop/ Terminal 2 = Inside Moving Vehicle Or Vessel 3 = Inside Vehicle Or Vessel At A Station / Stop/ Terminal	Nominal
QG	G. Respondent Gender	1 = Male 2 = Female	Nominal
QH	H. Respondent Position	1 = Standing 2 = Sitting	Nominal

Variable Name	Label	Value Labels	Measure
QI	I. Interview Language	1 = English 2 = Spanish 3 = Mandarin 4 = Vietnamese	Nominal
QJ	J. Weather	1 = Sunny 2 = Partly Cloudy 3 = Overcast 4 = Light Rain 5 = Heavy Rain 6 = Storm	Nominal
week	Weekend or Weekday	1 = Weekday 2 = Weekend	Nominal

QJ	J. Weather	1 = Sunny 2 = Partly Cloudy 3 = Overcast 4 = Light Rain 5 = Heavy Rain 6 = Storm	Nominal
week	Weekend or Weekday	1 = Weekday 2 = Weekend	Nominal

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MEMORANDUM

April 13, 2007

TO: Marc Roddin, Metropolitan Transportation Commission

FR: Bryan Godbe, President, Alice Chan, Research Director, Jacob Rannels, Senior Research Manager, Gayatri Kuber, Research Analyst

RE: MTC 2006 Transit Passenger Demographics Survey – Sampling Design and Implementation Plan (Technical Memo #3a)

This memo describes the sampling and interviewing procedures for the project, including the rationale and logic behind the sample design and the protocol for executing the sampling plan. Accompanying this memo are the sampling plans developed for each transit operator. Some transit systems require deviations to the procedures outlined below due to their unique characteristics. These deviations are documented in their sampling plans.

1. Sampling Design: Route Selection

First, for each transit system, the total number of interviews to be conducted (400 to 1000 depending on the transit system as specified in the RFP; see individual sampling plans) was divided among routes running on weekdays and weekends in proportion to the average number of weekday and weekend riders, respectively. Weekday and weekend passenger data were provided by the transit systems. The range of data provided varied broadly – some were able to provide daily averages, others weekday and weekend averages, and others monthly and weekend averages. The amount of data received by Godbe Research also varied, with some transit operators providing several months worth of rider data in addition to average figures, while others simply provided averages. (Through multiple rounds of consultation with the MTC Project Manager and liaisons from transit operators, individual sampling plans were refined as needed.)

Weekday routes and weekend routes were then sampled based on the proportion of the total number of riders for each route. Percentages of riders shown for each provider are for an entire weekday or weekend, and represent the percentage of riders among all routes for that transit system.

For providers that have more than 4,000 weekday riders on average, routes that comprise more than ten percent of total ridership were automatically selected for the interview sample. The number of interviews to be conducted on each of these routes was calculated in proportion to the percentage of riders on that route. The remaining routes that make up at least two percent of the overall number of passengers were then randomly sampled by assigning a random number to each of these routes, and selecting those with the highest random numbers. The remaining number of interviews to be conducted for that transit system was then divided evenly among these sampled routes.

For transit providers with fewer than 4,000 providers on average during a weekday, the number of interviews to be conducted on each route is chosen in proportion to the actual number of riders on that route.

As a final step for constructing an unbiased sampling plan for each transit system, the coverage of all sampled routes was checked to ensure they are not geographically clustered.

2. Sampling Implementation

a. Shifts, Start Time and Location

Two shifts of interviews have been created, 6 AM to 1 PM and 1 PM to 9 PM. These shifts are designed to cover both “peak” and “off-peak” hours throughout the day. In virtually all cases, one interviewer was assigned to each shift for each route. The only exception was when we needed to complete all interviews for the transit operator in the same day to prevent sampling from the identical universe of riders on consecutive days. This was to avoid potentially inviting the same people to participate in the survey they already completed on a previous day.

Interviewer start time was when a randomly selected bus, train or ferry left in the first hour of the shift. For example, if a route had a bus that was scheduled to leave the first stop at 6:00 AM, another leaving at 6:20 AM, and a third leaving at 6:40 AM, the interviewer would have had one of those three randomly selected as the beginning of his/her shift. Interviewers were also notified of the precise location of where to start their shift. (All of these details are documented in the individual sampling plan for each transit system.)

b. Procedures and Protocol

To ensure a random sample of riders (i.e., no systematic bias in who gets surveyed), interviewers followed a set protocol for choosing whom to interview. They started at the front left (driver’s) side of the bus, train car or ferry, and approached every n^{th} passenger to invite him or her to participate in the survey. An n^{th} value was computed for each sampled route for each operator based on the estimated number of riders

during the shift (see individual sampling plans for specifics). In addition to eliminating bias, this n^{th} count computation is designed to minimize the likelihood that most, if not all, interviews would be completed during "peak" hours only, thereby omitting or under-representing "off-peak" rider characteristics.

For some shifts during which the rider numbers were estimated to be low (based on the rider data provided by the transit operator), the interviewers would have needed to approach every passenger to complete the sample quotas assigned. In such cases, the n^{th} count was 1.

Proceeding with the interviews, if the n^{th} passenger refused to complete the survey, or was talking on his or her mobile phone, the interviewer would have approached the next n^{th} passenger, counting counter-clockwise from the starting point. (See Technical Memo #4d for survey administration procedures.) Similarly, after completing an interview, the interviewer would then approach the next n^{th} person.

Moreover, for transit operators with multiple cars or compartments (e.g., ACE and BART), a train car was randomly selected for each interviewer to conduct their assigned quota of interviews for their shift.

AC Transit Local

Total Surveys 754

Weekday

Ridership 158,445

Proportion 88%

No. of Surveys 664

AM Shift				PM Shift			
Route	**Ridership**	**Surveys**	**nth person**	**Route**	**Ridership**	**Surveys**	**nth person**
51	10.8%	36	24	51	10.8%	36	24
40/40L	6.3%	33	15	40/40L	6.3%	34	15
97	2.4%	33	6	50	4.1%	33	10
72R	4.2%	33	10	82/82L	6.1%	30	15
57	4.1%	32	10	72R	4.2%	32	10
54	4.3%	33	10	43	5.3%	33	13
72/72M	4.2%	33	10	62	2.2%	34	5
62	2.2%	33	5	97	2.4%	34	6
15	3.4%	33	8	54	4.3%	33	10
82/82L	6.1%	33	15	15	3.4%	33	8
Total		**332**				**332**	

Weekend

Ridership 113,148

Proportion 12%

No. of Surveys 90

AM Shift				PM Shift			
Route	**Ridership**	**Surveys**	**nth person**	**Route**	**Surveys**	**Interviews**	**nth person**
82/82L	18.5%	9	81	82/82L	18.5%	9	81
72/72M	10.5%	6	46	72/72M	10.5%	6	46
51	7.5%	6	33	51	7.5%	6	33
57	6.1%	6	26	50	2.7%	6	12
40/40L	7.2%	6	31	14	2.0%	6	9
14	2.0%	6	9	43	4.7%	6	21
43	4.7%	6	21	15	3.7%	6	16
Total		**45**				**45**	

AC Transit Transbay

Total Interviews 400

Weekday		**Weekend**	
Ridership	7,284	**Ridership**	2,154
Proportion	94%	**Proportion**	6%
No. of Surveys	378	**No. of Surveys**	22

AM and PM Shifts				**AM and PM Shifts**			
Route	**Ridership**	**Surveys**	**nth person**	**Route**	**Ridership**	**Surveys**	**nth person**
NL	43.4%	82	4	N/NL	55.9%	7	5
O/OX	27.0%	52	4	F	27.0%	4	2
F	24.0%	45	4				
M	5.5%	10	4				
Total		**189**				**11**	

ACE Train

Total Surveys 400

Weekday

Ridership 13,423
Proportion 100%
No. of Surveys 400

	Ridership	Surveys		Ridership	Surveys
AM Shift	Data not available	200	PM Shift	Data not available	200

Alameda Ferry

Total Surveys 404

Weekday
Ridership 1,430
Proportion 85%
No. of Surveys 344

		AM		PM	
	Ridership	**Surveys**	**nth Person**	**Surveys**	**nth Person**
Alameda Harbor Ferry	Data not available	38	3	58	3
Alameda Oakland Ferry	Data not available	124	3	124	3
Total		**162**		**182**	

Weekend
Ridership 1,627
Proportion 15%
No. of Surveys 60

		AM		PM	
	Ridership	**Surveys**	**nth Person**	**Surveys**	**nth Person**
Alameda Harbor Ferry	Data not available	0	3	0	3
Alameda Oakland Ferry	Data not available	30	3	30	3
Total		**30**		**30**	

BART

Total Surveys 500

Weekday

Ridership	334,426
Proportion	85%
No. of Surveys	430

AM and PM shifts

Route	Ridership	Surveys	nth person
Pittsburgh/Bay Point - Daly City	Data not available	43	78
Fremont - Daly City	Data not available	43	78
Richmond - Daly City	Data not available	43	78
Dublin/Pleasanton - Daly City	Data not available	43	78
Milbrae - Dublin/Pleasanton	Data not available	43	78
Total		**215**	

Weekend

Ridership	287,291
Proportion	15%
No. of Surveys	70

AM and PM shifts

Route	Ridership	Surveys	nth person
Pittsburgh/Bay Point - Daly City	Data not available	7	196
Fremont - Daly City	Data not available	7	196
Richmond - Daly City	Data not available	7	196
Dublin/Pleasanton - Daly City	Data not available	7	196
Milbrae - Dublin/Pleasanton	Data not available	7	196
		35	

Caltrain

Total Surveys 500

Weekday		**Weekend**	
Ridership	32,031	**Ridership**	16,166
Proportion	91%	**Proportion**	15%
No. of Surveys	454	**No. of Surveys**	46

	Ridership	**Surveys**	**nth person**		**Surveys**	**Interviews**	**nth person**
AM and PM Shifts	Data not available	227	8	AM and PM Shift	Data not available	23	2
Total		**227**				**23**	

CCCTA

Total Surveys 402

Weekday

Ridership 15,549
Proportion 93%
No. of Surveys 374

AM Shift				PM Shift			
Route	**Ridership**	**Surveys**	**nth person**	**Route**	**Ridership**	**Surveys**	**nth person**
110	17.4%	32	14	110	17.4%	32	14
114	10.4%	19	14	114	10.4%	19	14
108	2.0%	17	3	104	5.8%	17	4
102	3.7%	17	6	106	6.3%	17	10
111	3.6%	17	6	111	3.6%	17	6
121	8.0%	17	12	102	3.7%	17	6
960	5.0%	17	8	108	2.0%	17	3
115	7.4%	17	11	960	5.0%	17	8
106	6.3%	17	10	115	7.4%	17	11
104	5.8%	17	4	121	8.0%	17	12
Total		**187**				**187**	

Weekend

Ridership 5,825
Proportion 7%
No. of Surveys 28

AM or PM Shift

Route	**Ridership**	**Surveys**	**nth person**
121	15.0%	14 - AM	17
114	14.1%	14 - PM	16
		28	

Fairfield-Suisun

Total Surveys 400

Weekday

Ridership 2,689
Proportion 93%
No. of Surveys 370

AM Shift				PM Shift			
Route	**Ridership**	**Surveys**	**nth person**	**Route**	**Ridership**	**Survey**	**nth person**
90	23.1%	43	2	90	23.1%	43	2
1A	11.3%	21	2	1A	11.3%	21	2
3B	6.6%	15	2	2	7.0%	16	2
3A	6.1%	15	2	20	6.3%	15	2
40	4.9%	15	1	30	4.9%	15	1
2	7.0%	16	2	40	4.9%	15	1
5	4.3%	15	1	4	4.7%	15	1
7	5.5%	15	2	7	5.5%	15	2
4	4.7%	15	1	5	4.3%	15	1
6	8.5%	15	3	6	8.5%	15	3
Total		**185**				**185**	

Weekend

Ridership 932
Proportion 7%
No. of Interviews 30

AM and PM Shifts

Route	**Ridership**	**Surveys**	**nth person**
1A	18.5%	15 - AM	2
6	15.6%	15 - PM	2
Total		**30**	

Golden Gate Ferry

Total Surveys 400

Weekday
Ridership 6,099
Proportion 91%

No. of Surveys 364

AM and PM shifts

Route	Ridership	Surveys	nth person
Larkspur to SF	80.0%	145	8
Sausalito to SF	20.0%	37	8
Total		**182**	

Weekend
Ridership 2,972
Proportion 9%

No. of Surveys 36

AM and PM shifts

Route	Ridership	Surveys	nth person
Larkspur to SF	52.0%	9	42
Sausalito to SF	48.0%	9	42
Total		**18**	

Golden Gate Transit Local

Total Surveys 410

Weekday
Ridership 10,355
Proportion 91%
No. of Surveys 372

AM				PM			
Route	**Ridership**	**Surveys**	**nth person**	**Route**	**Ridership**	**Surveys**	**nth person**
35	25.21%	46	28	35	25.21%	47	28
22	Data not available	21	12	49	4.95%	19	13
17	6.88%	20	18	19	Data not available	20	6
52	3.45%	20	9	45	7.89%	20	20
51	3.71%	19	10	22	Data not available	20	12
29	6.38%	20	17	52	3.45%	20	9
49	4.95%	20	13	23	8.30%	20	21
71	8.47%	20	22	36	7.96%	20	21
Total		**186**				**186**	

Weekend
Ridership 5,216
Proportion 9%
No. of Surveys 38

AM and PM shifts

Route	Ridership	Surveys	nth person
35	58.6%	11	46
45	4.6%	8	5
		19	

Golden Gate Transit Regional

Total Surveys 440

Weekday

Ridership 14,456

Proportion 84%

No. of Surveys 370

AM				PM			
Route	**Ridership**	**Surveys**	**nth person**	**Route**	**Ridership**	**Surveys**	**nth person**
70	19.6%	34	42	70	19.6%	34	42
80	17.8%	31	42	80	17.8%	31	42
4	9.3%	20	33	10	5.4%	20	20
18	2.8%	20	10	4	9.3%	21	33
72	4.1%	20	15	24	6.2%	20	22
76	2.6%	20	10	56	2.3%	19	8
54	5.5%	20	20	18	2.8%	20	10
40/42	4.3%	20	15	72	4.1%	20	15
Total		**185**				**185**	

Weekend

Ridership 10,946

Proportion 16%

No. of Interviews 70

AM and PM shifts

Route	Ridership	Surveys	nth person
80	50.2%	21	44
70	32.3%	14	42
Total		**35**	

MUNI Bus

Total Surveys 1026

Weekday

Ridership 279,995
Proportior 88%
No. of Surveys 902

AM Shift				PM Shift			
Route	**Ridership**	**Surveys**	**nth person**	**Route**	**Ridership**	**Surveys**	**nth person**
38	10.5%	46	32	38	10.5%	46	32
15	9.0%	45	28	15	9.0%	44	28
38L	6.4%	45	20	38L	6.4%	46	20
52	1.1%	44	4	18	1.2%	45	4
43	5.3%	46	17	44	4.3%	45	13
19	3.4%	45	10	52	1.1%	45	4
9X	3.4%	45	11	9	6.2%	45	19
27	3.2%	45	10	28	4.3%	45	13
44	4.3%	45	13	47	4.7%	45	15
9	6.2%	45	19	14L	1.5%	45	5
Total		**451**				**451**	

Weekend

Ridership 192,843
Proportion 12%
No. of Surveys 124

AM Shift				PM Shift			
Route	**Ridership**	**Surveys**	**nth person**	**Route**	**Ridership**	**Surveys**	**nth person**
37	35.5%	21	80	37	35.5%	21	81
2	15.1%	9	80	2	15.1%	9	81
9AX	4.6%	8	28	31	5.9%	8	36
31	5.9%	8	36	9	4.6%	8	28
38	6.8%	8	41	28	8.0%	8	48
43	6.4%	8	39	43	4.0%	8	24
		62				**62**	

MUNI Rail

Total Surveys 1000

Weekday

Ridership 145,874
Proportion 82%
No. of Surveys 820

Weekend

Ridership 159,215
Proportion 18%
No. of Surveys 180

AM and PM shifts

Route	Ridership	Surveys	nth person
F	9.6%	39	36
J	11.9%	49	36
K	13.9%	57	36
L	20.8%	85	36
M	17.9%	74	36
N	25.9%	106	36
Total		**410**	

AM and PM shifts

Route	Ridership	Surveys	nth person
F	17.3%	15	44
J	8.5%	8	44
K	13.5%	12	44
L	16.5%	15	44
M	16.0%	14	44
N	28.3%	26	44
Total		**90**	

MUNI Trolley

Total Interviews 1,008

Weekday

Ridership 238,480
Proportion 85%
No. of Surveys 846

AM Shift				PM Shift			
Route	**Ridership**	**Surveys**	**nth person**	**Route**	**Ridership**	**Surveys**	**nth person**
14	17.0%	70	57	14	17.0%	69	57
30	12.2%	51	57	30	12.2%	52	57
49	12.1%	48	57	49	12.1%	52	57
1	10.7%	45	57	1	10.7%	46	57
41	1.5%	34	10	5	5.6%	34	39
31	4.0%	34	28	7	2.4%	34	17
6	3.3%	34	23	22	8.2%	34	58
45	5.2%	34	37	6	3.3%	34	23
24	5.7%	34	40	108	0.8%	34	6
108	0.8%	39	6	41	1.5%	34	10
Total		**423**				**423**	

Weekend

Ridership 222,239
Proportion 16%
No. of Surveys 162

AM Shift				PM Shift			
Route	**Ridership**	**Surveys**	**nth person**	**Route**	**Ridership**	**Surveys**	**nth person**
14	20.6%	16	71	14	20.6%	16	71
30	19.0%	15	71	30	19.0%	15	70
I	12.9%	10	72	I	12.9%	10	72
108	1.0%	10	6	45	10.5%	10	59
6	1.8%	10	10	33	1.1%	10	6
3	1.5%	10	9	3	1.5%	10	9
21	4.4%	10	25	108	1.0%	10	6
		81				**81**	

MUNI Cable Car

Total Surveys 500

Weekday

Ridership 21,637
Proportion 72%
No. of Surveys 360

AM and PM shifts

Weekend

Ridership 42,392
Proportion 28%
No. of Surveys 140

AM and PM shifts

Route	Ridership	Surveys	nth person	Route	Ridership	Surveys	nth person
59	37.9%	68	12	59	37.6%	26	30
60	42.1%	76	12	60	44.7%	31	30
61	20.0%	36	12	61	17.7%	12	30
Total		**180**				**70**	

SamTrans

Total Surveys 400

Weekday

Ridership 49,019
Proportion 91%
No. of Surveys 364

AM Shift				PM Shift			
Route	**Ridership**	**Surveys**	**nth person**	**Route**	**Ridership**	**Surveys**	**nth person**
390	12.9%	24	13	390	12.9%	24	13
391	12.1%	22	13	391	12.1%	22	14
120	10.6%	18	13	120	10.6%	18	14
110	2.4%	17	4	250	3.5%	17	5
260	2.2%	15	3	296	4.1%	17	6
250	3.5%	17	5	260	2.2%	17	3
292	7.8%	17	11	251	0.8%	17	1
295	2.1%	17	3	294	0.6%	17	1
KX	4.5%	17	6	KX	4.5%	17	6
14	1.0%	17	2	14	1.0%	17	2
Total		**181**				**183**	

Weekend

Ridership 23,494
Proportion 9%
No. of Interviews 36

AM/PM Shift

Route	Ridership	Surveys	nth person
390	19.3%	18 - AM	13
120	16.0%	18 - PM	10
Total		**36**	

Santa Rosa City Bus

Total Surveys 418

Weekday
Ridership 9,104
Proportion 90%
No. of Surveys 380

Weekend
Ridership 4,815
Proportion 10%
No. of Surveys 38

AM Shift				PM Shift				AM and PM Shifts			
Routes	**Ridership**	**Surveys**	**nth person**	**Routes**	**Ridership**	**Surveys**	**nth person**	**Routes**	**Ridership**	**Surveys**	**nth person**
8	7.1%	20	17	17	6.6%	19	16	14	9.4%	19 - AM	12
14	9.4%	20	23	15	7.1%	19	17	6	4.2%	19 - PM	5
3	5.1%	19	12	12	7.1%	19	17				
11	6.1%	16	15	6	4.2%	19	10				
10	4.3%	19	10	5	7.9%	19	19				
17	6.6%	20	16	1	8.4%	20	20				
4	8.8%	19	21	3	5.1%	19	12				
1	8.4%	19	20	10	4.3%	19	10				
15	7.1%	19	17	8	7.1%	18	17				
2	6.3%	19	15	11	6.1%	19	15				
Total		**190**				**190**				**38**	

Sonoma County Transit

Total Surveys 408

Weekday		**Weekend**	
Ridership	5,459	**Ridership**	2,180
Proportion	91%	**Proportion**	9%
No. of Surveys	370	**No. of Surveys**	38

AM and PM Shifts				**AM and PM Shifts**			
Route	**Ridership**	**Surveys**	**nth person**	**Route**	**Ridership**	**Surveys**	**nth person**
60	21.1%	38	5	44	16.1%	19 - AM	6
44	16.0%	29	5	20	12.1%	19 - PM	4
48	13.5%	24	5				
30	10.7%	19	5				
20	10.3%	19	5				
10	5.4%	11	4				
32	3.6%	11	3				
14	3.3%	11	3				
12	3.3%	11	3				
22	2.1%	11	2				
Total		**185**				**38**	

Tri Delta Transit

Total Surveys 612

Weekday
Ridership 44,785
Proportion 98%

No. of Surveys 612

Weekend
Ridership 4,136
Proportion 2%
No. of Surveys 0

AM Shift				PM Shift					
Route	**Ridership**	**Surveys**	**nth person**	**Route**	**Ridership**	**Surveys**	**nth person**	**Route**	**Surveys**
380	22.8%	71	4	380	22.8%	71	4		
391	14.2%	54	3	391	14.2%	54	3		
388	13.2%	53	3	388	13.2%	52	3		
300	11.4%	46	3	300	11.4%	47	3		
387	9.7%	45	2	387	9.7%	45	2		
389	6.1%	37	2	389	6.1%	37	2		
Total		**306**				**306**			

Union City Transit

Total Surveys 400

Weekday		**Weekend**	
Ridership	1,416	**Ridership**	828
Proportion	90%	**Proportion**	10%
No. of Surveys	358	**No. of Surveys**	42

AM and PM shifts

Route	Ridership	Surveys	nth person
1A	29.0%	52	4
1B	26.4%	47	4
2	28.5%	51	4
3	9.6%	17	4
4	6.5%	12	4
Total		**179**	

AM and PM shifts

Route	Ridership	Surveys	nth person
1A	32.3%	11	12
2	31.4%	10	13
		21	

Vacaville City Coach

Total Surveys 400

Weekday
Ridership 738
Proportion 91%
No. of Surveys 364

Weekend
Ridership 357
Proportion 9%
No. of Surveys 36

AM Shift				PM Shift				AM and PM shifts			
Routes	**Ridership**	**Surveys**	**nth person**	**Routes**	**Ridership**	**Surveys**	**nth person**	**Routes**	**Ridership**	**Surveys**	**nth person**
5	43.4%	79	2	5	43.4%	79	2	5	43.4%	18 - AM	9
6B	14.2%	26	2	6B	14.2%	26	2	2	6.6%	18 - PM	1
6	10.8%	20	2	6	10.8%	20	2				
8	8.3%	15	2	8	8.3%	15	2				
4	7.0%	13	2	4	7.0%	13	2				
2	6.6%	12	2	2	6.6%	12	2				
7	5.5%	10	2	7	5.5%	10	2				
1	4.3%	8	2	1	4.3%	8	2				
Total		**182**				**182**				**36**	

Vallejo Bus

Total Surveys 402

Weekday

Ridership 7,739

Proportion 93%

No. of Surveys 374

AM Shift				PM Shift			
Route	**Ridership**	**Surveys**	**nth person**	**Route**	**Ridership**	**Surveys**	**nth person**
1	18.3%	34	21	1	18.3%	34	21
80	17.9%	33	21	80	17.9%	33	21
8	4.2%	15	11	5	8.0%	15	21
200	3.8%	15	10	2	9.8%	15	25
3	3.2%	15	8	7	6.1%	15	16
4	3.0%	15	8	200	3.8%	15	10
9	5.1%	15	13	9	5.1%	15	13
5	8.0%	15	21	8	4.2%	15	11
91	2.2%	15	6	3	3.2%	15	8
2	9.8%	15	25	90	7.0%	15	18
Total		**187**				**187**	

Weekend

Ridership 2,845

Proportion 7%

No. of Surveys 28

AM and PM shifts

Route	Ridership	Surveys
9	5.8%	14 - AM
85	6.1%	14 - PM
Total		**28**

Vallejo Ferry

Total Intervi 400

Weekday		**Weekend**	
Ridership	9,901	**Ridership**	2,229
Proportion	82%	**Proportion**	18%
No. of Surveys	364	**No. of Surveys**	36

VINE

Total Surveys 408

Weekday
Ridership 2,537
Proportion 89%
No. of Surveys 360

Weekend
Ridership 1,603
Proportion 11%
No. of Surveys 48

AM Shift				PM Shift				AM and PM Shifts			
Route	**Ridership**	**Surveys**	**nth person**	**Route**	**Ridership**	**Surveys**	**nth person**	**Route**	**Ridership**	**Surveys**	**nth person**
10	36.9%	65	2	10	36.9%	65	2	10	36.9%	12 - AM and PM	8
4	10.6%	20	2	4	10.6%	17	2	4	10.6%	12 - AM and PM	2
2	8.6%	12	3	2	8.6%	11	3				
1A	7.8%	12	3	1A	7.8%	12	3				
5	6.6%	12	2	5	6.6%	12	2				
3A	5.6%	12	2	3A	5.6%	13	2				
3B	4.8%	13	2	3B	4.8%	13	2				
1B	4.7%	12	2	1B	4.7%	12	2				
6	4.7%	11	2	6	4.7%	12	2				
Trippers		11	1	Trippers		13	1				
Total		**180**				**180**				**24**	

VTA Bus

Total Surveys 656

Weekday

Ridership 100,450
Proportion 83%
No. of Surveys 502

AM Shift				PM Shift			
Route	**Ridership**	**Surveys**	**nth person**	**Route**	**Ridership**	**Surveys**	**nth person**
22	0.2	41	40	22	16.4%	41	40
25	0.1	29	23	81	2.8%	30	10
73	0.0	30	7	522	5.4%	30	18
81	0.0	30	10	68	4.2%	30	14
62	0.0	28	10	23	5.4%	30	18
26	0.0	33	12	73	2.1%	30	7
55	0.0	30	8	25	6.80%	30	23
23	0.1	30	18	60	2.40%	30	8
Total		**251**				**251**	

Weekend

Ridership 102,706
Proportion 17%

No. of Interviews 154

AM Shift				PM Shift			
Route	**Ridership**	**Surveys**	**nth person**	**Route**	**Ridership**	**Surveys**	**nth person**
22	22.1%	12	103	22	22.1%	11	103
180	2.1%	11	10	81	2.7%	11	13
62	2.5%	11	12	522	3.5%	11	16
68	5.1%	12	24	66	5.4%	11	25
81	2.7%	10	13	62	2.5%	11	12
522	3.5%	12	16	68	5.1%	11	14
77	2.0%	9	10	77	2.0%	11	10
Total		**77**				**77**	

VTA Lightrail

Total Surveys 502

Weekday
Ridership 35,944
Proportion 78%
No. of Surveys 393

AM Shift				PM Shift			
Route	**Ridership**	**Surveys**	**nth person**	**Route**	**Ridership**	**Surveys**	**nth person**
901	63.3%	126	18	901	63.3%	124	18
902	36.7%	71	18	902	36.7%	72	18
Total		**197**				**196**	

Weekend
Ridership 49,609
Proportion 22%
Interviews 109

AM Shift				PM Shift			
Route	**Ridership**	**Surveys**	**nth person**	**Route**	**Ridership**	**Surveys**	**nth person**
901	69.4%	36	46	901	69.4%	39	46
902	30.6%	17	46	902	30.6%	17	46
		53				**56**	

WestCAT

Total Surveys 403

Weekday		**Weekend**	
Ridership	5,264	**Ridership**	1,607
Proportion	94%	**Proportion**	6%
No. of Surveys	379	**No. of Surveys**	24

AM Shift				**PM Shift**				**AM and PM shifts**			
Route	**Ridership**	**Surveys**	**nth person**	**Route**	**Ridership**	**Surveys**	**nth person**	**Route**	**Ridership**	**Surveys**	**nth person**
J	28.0%	52	14	J	28.0%	52	14	Rte J	80.5%	12	28
13	5.4%	20	7	Martinez Link 30Z	3.6%	21	5	Rte J	80.5%	12	28
JPX	6.4%	16	8	15	5.1%	20	7				
15	5.1%	20	7	13	5.4%	20	7				
10	2.9%	19	4	JX	9.8%	19	13				
Lynx	5.6%	20	7	16	8.2%	20	11				
11	6.3%	20	8	10	2.9%	20	4				
C3	2.4%	20	3	19	4.0%	20	5				
Total		**187**				**192**				**24**	

WHEELS

Total Surveys 396

Weekday
Ridership 7,453
Proportion 87%
No. of Surveys 344

Weekend
Ridership 5,519
Proportion 13%
No. of Interviews 52

AM Shift				PM Shift				AM and PM Shifts			
Route	**Ridership**	**Surveys**	**nth person**	**Route**	**Ridership**	**Surveys**	**nth person**	**Route**	**Ridership**	**Surveys**	**nth person**
10	41.9%	73	7	10	41.9%	73	7	10	75.9%	20 - AM and PM	35
18	2.1%	12	2	18	2.1%	11	2	15	9.8%	6 - AM	15
12	8.9%	9	10	12	8.9%	11	10	12	7.6%	6 - PM	12
15	4.8%	9	5	15	4.8%	11	5				
1	3.6%	12	4	1	3.6%	11	4				
11	2.8%	12	3	11	2.8%	11	3				
14	2.4%	11	3	14	2.4%	11	3				
3	2.1%	12	3	18	2.1%	11	2				
70	2.1%	11	2	70	2.1%	11	2				
8	2.1%	11	2	8	2.1%	11	2				
Total		**172**				**172**				**52**	

Benicia Breeze

Total Surveys 150

Weekday
Ridership 604
Proportion 80%
No. of Surveys 112

Weekend
Ridership 148
Proportion 20%
No. of Surveys 38

AM ans PM Shift

Route	Ridership	Surveys	nth Person
19	2.5%	3	2
21	5.8%	7	2
22	7.6%	8	2
23	0.7%	1	2
75	24.9%	37	2
Total		**56**	

AM and PM Shift

Route	Ridership	Surveys	nth Person
21	9.5%	3	2
22	7.4%	2	2
75	41.2%	14	2
		19	

GODBE RESEARCH
Gain Insight

MEMORANDUM

April 13, 2007

TO: Marc Roddin, Metropolitan Transportation Commission

FR: Bryan Godbe, President, Alice Chan, Research Director, Jacob Rannels, Senior Research Manager, and Gayatri Kuber, Research Analyst

RE: MTC 2006 Transit Passenger Demographics Survey – Data Processing, Weighting and Expansion Methods (Technical Memo #3b)

This memo documents the methods and procedures used to process and weigh the data collected for this study.

1. Data Processing

Before data analysis began, all completed surveys were checked for consistency and/or completeness. That is, surveys that showed inconsistent answers were excluded (e.g., 2 people total were reported living in a household, but 4 children were reported living in the same household). In some instances, surveys that were completed during the wrong shifts were also eliminated from further analysis (e.g., 2pm when the shift should have ended at 1pm or on a weekend day instead of the assigned weekday). In addition, if more than 3 questions beyond the income question were left unanswered, that particular survey was excluded. Replacement survey shifts were conducted (mostly in March 2007) to ensure that the original quotas for each route for each transit system were met.

In some instances, because the nth count (i.e., the number of passengers to skip in between surveys) based on the ridership data for a particular shift was too conservative, the number of completed interviews exceeded the pre-assigned quota. To bring the quotas for the resulting over-sampled routes back to the correct proportion, based on the sampling plan, the extra cases were deleted by random selection, depending on the number exceeded. For instance, if the sampling plan called for a quota of 27 completed surveys for the 6am to 1pm shift of a particular route, and there were actually 32 completed surveys, 5 cases needed to be eliminated from further analysis. To ensure that the exclusion of cases was completely random and not tied to any form of bias, every 6^{th} case was excluded (32 / 5 = 6.4) to bring the total back down to 27.

Due to the rounding of percentages on quotas at the shift level for some routes, some systems have more completed surveys than the pre-assigned quotas (e.g., Alameda Ferry has 404 completed surveys when the quota called for 400). In the case of WHEELS, a total of 396 surveys were completed, which is not statistically different from 400.

2. Data Weighting

As described in Technical Memo #2, different sample quotas were assigned to each of the transit systems to allow for meaningful analysis at the system level. To arrive at an accurate demographic breakdown of ridership demographics served by all of the surveyed transit systems, the overall data across systems were weighted proportionally, based on the average weekday and average weekend ridership statistics provided by each of the transit systems. When looking at the survey results at the transit system level, the weights were taken off.

Shown in the table below are the ridership statistics and the number of completed surveys by transit system and the specific weights applied to each system. The "Average Weekly Ridership" column contains the total number of weekday and weekend riders for each transit system during an average week. The "weekday" figure represents the average total for the five weekdays, i.e., Monday through Friday, while the "weekend" figure represents the average total for the two weekend days, i.e, Saturday and Sunday. The "Universe %" column shows the ridership number as a percentage of the total ridership across all transit systems in an average week, i.e., 9.04 million. The "n" column shows the actual number of surveys completed for each system during the week and the weekend, while the "Sample %" column tabulates that number of completed surveys as a percentage of the 14512 total completed surveys across all transit systems included in the entire study. The "Weight" applied to each system is computed to "bring up" or "bring down" the number of completed surveys to reflect the actual proportional ridership representation, as shown in the "Universe" columns.

For instance, for AC Transit Local, during an average week, there are a total of 792,225 riders on the five weekdays, Monday to Friday, or 8.8 percent of the total universe of 9.04 million regional riders. A total of 664 surveys were completed for AC Transit Local during the week, which represents 4.6% of the 14,512 completed surveys for the entire study. To bring the data for AC Transit Local weekday up to this actual proportion of 8.8 percent of the regional riders, a weight of 1.9155 was applied in the analysis of the AC Transit survey data at the overall level.

Once the weights were applied to the data, due to rounding, the total sample size for all subsequent analysis at the overall level dropped from 14,512 to 14,505. The difference in 7 cases is not statistically significant.

Transit System	Universe		Sample		
	Average Weekly Ridership	%	n	%	Weight
AC Transit Local Weekday	792,225	8.8	664	4.6	1.9155
AC Transit Local Weekend	113,148	1.3	90	0.6	2.0184
AC Transit Transbay Weekday	36,420	0.4	378	2.6	0.1547
AC Transit Transbay Weekend	2,154	0.0	24	0.2	0.1441
ACE Train	67,115	0.7	400	2.8	0.2694
Alameda Ferry Weekday	7,150	0.1	344	2.4	0.0334
Alameda Ferry Weekend	1,627	0.0	60	0.4	0.0435
BART Weekday	1,672,130	18.5	430	3.0	6.2431
BART Weekend	287,291	3.2	70	0.5	6.5891
Caltrain Weekday	160,155	1.8	454	3.1	0.5664
Caltrain Weekend	16,166	0.2	46	0.3	0.5642
CCCTA Weekday	77,745	0.9	374	2.6	0.3337
CCCTA Weekend	5,825	0.1	28	0.2	0.3340
Fairfield Suisun Transit Weekday	13,445	0.1	370	2.5	0.0583
Fairfield Suisun Transit Weekend	932	0.0	30	0.2	0.0499
Golden Gate Ferry Weekday	30,495	0.3	364	2.5	0.1345
Golden Gate Ferry Weekend	2,972	0.0	36	0.2	0.1325
Golden Gate Transit Local Weekday	51,775	0.6	372	2.6	0.2234
Golden Gate Transit Local Weekend	5,216	0.1	38	0.3	0.2204
Golden Gate Transit Regional Weekday	72,280	0.8	370	2.5	0.3136
Golden Gate Transit Regional Weekend	10,946	0.1	70	0.5	0.2510
MUNI Bus Weekday	1,399,975	15.5	902	6.2	2.4918
MUNI Bus Weekend	192,843	2.1	124	0.9	2.4968
MUNI Rail Weekday	729,370	8.1	820	5.7	1.4280
MUNI Rail Weekend	159,215	1.8	180	1.2	1.4201
MUNI Trolley Weekday	1,192,400	13.2	846	5.8	2.2628
MUNI Trolley Weekend	222,239	2.5	162	1.1	2.2025
MUNI Cable Car Weekday	108,185	1.2	360	2.5	0.4825
MUNI Cable Car Weekend	42,392	0.5	140	1.0	0.4861
SamTrans Weekday	245,095	2.7	367	2.5	1.0722
SamTrans Weekend	23,494	0.3	36	0.2	1.0477
Santa Rosa City Bus Weekday	45,520	0.5	380	2.6	0.1923
Santa Rosa City Bus Weekend	4,815	0.1	38	0.3	0.2034
Sonoma County Transit Weekday	27,295	0.3	368	2.5	0.1191
Sonoma County Transit Weekend	2,810	0.0	38	0.3	0.1187
Tri Delta Weekday	223,925	2.5	612	4.2	0.5874
Tri Delta Weekend*	4,136	0.0	0		0.0000
Union City Transit Weekday	7,080	0.1	358	2.5	0.0318
Union City Transit Weekend	828	0.0	42	0.3	0.0317
Vacaville City Coach Weekday	3,690	0.0	366	2.5	0.0162
Vacaville City Coach Weekend	357	0.0	37	0.3	0.0155

Transit System	Universe		Sample		
	Average Weekly Ridership	%	n	%	Weight
Vallejo Bus Weekday	38,695	0.4	374	2.6	0.1661
Vallejo Bus Weekend	2,845	0.0	28	0.2	0.1631
Vallejo Ferry Weekday	9,901	0.1	362	2.5	0.0439
Vallejo Ferry Weekend	2,229	0.0	38	0.3	0.0942
VINE Weekday	12,685	0.1	359	2.5	0.0567
VINE Weekend	1,603	0.0	49	0.3	0.0525
VTA Bus Weekday	502,250	5.6	502	3.5	1.6063
VTA Bus Weekend	102,706	1.1	154	1.1	1.0707
VTA Lightrail Weekday	179,720	2.0	393	2.7	0.7342
VTA Lightrail Weekend	49,609	0.5	109	0.8	0.7307
WestCAT Weekday	26,320	0.3	378	2.6	0.1118
WestCAT Weekend	1,607	0.0	25	0.2	0.1032
Wheels Weekday	37,265	0.4	344	2.4	0.1739
Wheels Weekend	5,519	0.1	52	0.4	0.1704
Benicia Breeze Weekday	3,020	0.0	112	0.8	0.0433
Benicia Breeze Weekend	148	0.0	38	0.3	0.0063
Rio Vista**	110	0.0	7	0.0	0.0252
	9,039,108	100.0	14,512	100.0	

*No surveys were conducted for Tri Delta weekend service, because weekend ridership comprised 2% of the system's total ridership rendering statistically valid sampling of routes impossible.

**Even though ridership numbers made getting a statistically valid sample impossible, a small number of completed interviewers were still requested.

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MEMORANDUM

November 2, 2006

TO: Marc Roddin, Metropolitan Transportation Commission

FR: Bryan Godbe, President, Alice Chan, Research Director, Bryan Murray and Jacob Rannels, Senior Research Managers

RE: MTC 2006 Transit Passenger Demographics Survey – Pilot Test Results (Technical Memo #4a and #4b)

This memo documents what we learned from the pilot test conducted on October 24, 25 and 28, 2006. It also includes interview training procedures. Corrective actions to be taken based on the lessons learned from the pilot test are also documented throughout this memo. Data tables are contained in separate documents displaying the topline results and sample crosstabulation tables.

1. Scope

Three transit operators representing different modes of transportation were selected to be included in the pilot test: BART, Union City Transit and Vallejo Ferry.

Interviews were conducted on October 24 and 25 for BART and Union City Transit for the weekday interviews, and October 28 for the weekend interviews for all 3 transit operators. A total of 697, 100 and 37 interviews were completed for BART, Union City Transit and Vallejo Ferry, respectively. (More details on sample management and scheduling are provided below.)

2. Questionnaire

The survey was administered in four languages: English, Mandarin, Spanish and Vietnamese. Seven of the completed pilot interviews were in Spanish (3 for BART and 4 for Union City Transit). There were no completed interviews in Mandarin or Vietnamese. According to interviewer feedback, there were no major issues with the language or wording of the questions.

3. Procedures

a. Interviewer Recruitment, Training and Quality Assurance

For the pilot test, all interviews were done by a subcontractor, Nichols Research. The interviewers are all either experienced interviewers Nichols have routinely used for intercept interviewing projects or have been qualified for having prior experience or demonstrated comfort with intercept interviewing techniques and the use of PDAs or similar technology devices.

All interviewers went through a training and briefing session that lasted 1 ½ to 2 hours, depending on the experience level of the interviewers. The briefing began with going over the survey on paper to get familiar with the questions and skip pattern logic. This was followed by a walkthrough of the PDA version to ensure that the interviewers were comfortable with reading from and entering data into the PDAs. They also went through practice interviews. The training also went over the interviewing procedure on where to start counting passengers and on implementing the nth count in the sampling plan.

Godbe team members were present to monitor the first day of pretest fielding, which covered BART and Union City Transit. Nichols also had field supervisors monitoring less experienced interviewers (several of the experienced interviewers are reportedly actual Nichols field supervisors themselves on other projects).

b. Scheduling

Each interviewer was given information on the shift they covered based on the sampling plan designed for the assigned transit operator. That is, they knew the location at which their shift began, when they needed to report in, how long their shift lasted and the protocol of skipping to the nth person and anyone talking on a cell phone. All interviewers had to call into the Field Operations Manager at Nichols to report in at the start and at the end of their shifts. There were no reports of interviewers not being able to find where they needed to go for their assigned shifts.

The weekday interviews scheduled for Vallejo Ferry on October 28 were not covered because no interviewers were available. We were not informed of this until after the fact.

Corrective action: We have established a weekly meeting with Nichols to go over staffing, scheduling and any issues that may pertain to the upcoming week's interviews. Also, we have asked Nichols that they will inform us of known staffing gaps at any given point in time so that we can notify the transit operator of schedule changes on a timely basis.

c. Onsite Logistics

Both the interviewers and Godbe team members who monitored the interviewers reported that the interactions with transit operator personnel were very smooth and did not experience any resistance from drivers or vessel operators.

d. Interviewing

All English interviews were administered via the preprogrammed PDAs which automated skip patterns built into the questionnaire. When an interviewer approached a passenger that clearly did not speak English and could tell that he or she was likely a Spanish speaker, a paper version of the questionnaire that had been translated into Spanish was offered to the passenger to fill out on his/her own.[1] Similarly, for Asian riders, the interviewers would offer them both the Mandarin and Vietnamese versions of the paper questionnaire and let them select the version they could fill out. Interviewers reported that this procedure – which was also used in the Spare the Air project – worked very smoothly.

Based on the general impression of the interviewers who also worked on the Spare the Air project this year (i.e., not through scientific analysis), transit riders were somewhat more reluctant to answer demographic questions aloud vs. filling them out. The interviewers on the night shift on BART noticed this more, and their overall perception was that people were tired from the workday.

Interviewers were inconsistent in entering all data fields outside of the substantive questions in the survey, such as route number, transit system name, etc. In some cases, we were able to back into that information using the Interviewer ID. However, in many of the Vallejo Ferry interviews, we had no information about the direction in which the ferry was traveling.

Corrective action: We have reemphasized to Nichols the importance of filling in all information fields and will redo training with the interviewers again prior to the start of next week's interviews.

e. Sample Management

The completed interviews for BART exceeded the 500 quota even though the morning shifts for 2 routes were not covered during the pilot. Upon investigating this with Nichols, the interviewers apparently did not follow the sample quotas (also evident in not filling out route information), but instead did what they did on the Spare the Air Project, which was to get as many completes as possible during their shift.

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[1] The original intention was for the Spanish interviews to be conducted using PDAs as well. However, due to the challenges of finding bilingual interviewers, paper instruments were handed out instead.

Corrective action: We will be retraining Nichols on sample management and the need to follow quotas and randomization procedures (i.e., counting nth passenger). We will also use our weekly meetings with Nichols to go over sample management procedures for the upcoming week's interviews.

f. Use of PDAs

In terms of using PDAs for the English interviewing, there were two sets of key learning that will have impact on future procedures:

First, two PDAs failed in the middle of the shifts due to unusually short battery life.

Corrective action: These are being replaced. However, to ensure that we do not lose interviewer productivity, going forward, we will ensure that each interviewer has a batch of paper surveys in English as well to use as the interviewing instrument in the event that the PDAs fail for any reason.

The second set of learning has to do with the logistics of extracting the data from the PDAs on a regular basis. The PDAs were effectively out in the field for the full week of the pilot, making it impossible to get daily data downloads. That is because the devices would either be at the interviewers' homes for the batteries to be charged or be transported by field supervisors from one location to another between groups of interviews. As a result, we were not able to see the data until all the PDAs were back. More specifically, some of the PDAs did not get back to us until the afternoon of Nov 1. This caused delay in our data analysis.

Corrective action: Going forward, we will be going onsite to Nichols every Monday afternoon to download the data from the PDAs– after one week's interviews have been completed over the weekend and before another week's begin on Tuesday.

GODBE RESEARCH
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MEMORANDUM

April 13, 2007

TO: Marc Roddin, Metropolitan Transportation Commission

FR: Bryan Godbe, President, Alice Chan, Research Director, Jacob Rannels, Senior Research Manager, and Gayatri Kuber, Research Analyst

RE: MTC 2006 Transit Passenger Demographics Survey – Final Survey Instruments and Procedures (Technical Memo #4d)

This memo outlines the procedures specific to handing out the paper surveys in four languages (English, Mandarin Chinese, Spanish and Vietnamese) – see attached final instruments.

Survey Administration Procedures

Interviewers were instructed to follow these procedures:

1) Approach the nth person on the bus/ferry/train car, as specified in the sampling plan for that particular transit system/operator.

2) Invite him/her to participate in the survey.

3) If the approached rider does not speak English, offer the translated survey versions and have him/her pick the one s/he recognizes.

4) Give him/her the survey to fill out on his/her own.

5) Wait for the respondent to complete the survey.

6) If more than 3 questions, not including the income question, are not filled out, please politely ask the respondent to complete the missing questions.

7) Complete the fields in the box on page 4 - these fields are NOT intended for the passenger to fill out, but the interviewer.

8) Proceed to the next nth person per sampling instructions.